

CLAIMS

I/We claim:

1. A gate assembly for use with a conveying surface which has an aperture formed therein, the gate assembly comprising:

a moveable gate plate which is operable to selectively occlude the aperture; and
first and second chutes which are borne by the moveable gate plate and which move therewith, and which are individually operable to receive and carry away an article which passes through the aperture of the conveying surface.

2. A gate assembly as claimed in claim 1, and wherein the conveying surface is made integral with a vibratory conveyor.

3. A gate assembly as claimed in claim 1, and further comprising:
a removable frame borne by the conveying surface, and wherein the gate plate is moveably borne by the frame.

4. A gate assembly as claimed in claim 3, and wherein the conveying surface has an upwardly facing surface for transporting the articles along a path of travel, and an opposite downwardly facing surface, and wherein the frame is releasably mounted on the downwardly facing surface.

5. A gate assembly as claimed in claim 4, and wherein the frame has a first end, and an opposite second end, and wherein a first mounting fixture is mounted on the downwardly facing surface of the conveying surface, and is operable to slideably

receive, and mechanically cooperate with the first end of the frame, and wherein a second mounting fixture is disposed in spaced relation relative to the first mounting fixture, and is further mounted on the downwardly facing surface, and wherein a latch is borne by the second end of the frame and is operable to releasably engage the second mounting fixture.

6. A gate assembly as claimed in claim 3, and wherein an actuator is borne by the frame and is operable to move the gate plate from a first position wherein the gate plate substantially occludes the aperture formed in the conveying surface, to a second position where the gate plate is disposed in a substantially non-occluding position relative to the aperture.

7. A gate assembly as claimed in claim 1, and wherein the gate plate is reciprocally moveable along a course of travel between a first position wherein the gate plate substantially occludes the aperture, to a second position, wherein the gate plate is disposed in a substantially non-occluding orientation relative to the aperture.

8. A gate assembly as claimed in claim 7, and wherein the gate plate, when disposed in the second position, orients the first chute into receiving relation relative to the aperture, and wherein the gate plate, when located in the first position, orients the second chute in receiving relation relative to the aperture.

9. A gate assembly as claimed in claim 8, and further comprising:

a frame which is releasably coupled to the conveying surface, and wherein the gate plate slideably cooperates with the frame;

an actuator mounted on the frame, and which is operable to forceably engage the gate plate and move the gate plate between the first and second positions; and

mounting fixtures borne by the conveying surface and which releasably engage the frame and position the gate plate in an operable orientation relative to the aperture.

10. A gate assembly for use with a vibratory conveyor having a conveying surface which defines an aperture, the gate assembly comprising:

a frame having opposite first and second ends which are releasably mounted on the vibratory conveyor;

a gate plate moveably borne by the frame and which is operable to selectively move from a first position, wherein the gate plate is disposed in substantially occluding relation relative to the aperture, and a second position, wherein the gate plate is located in a substantially non-occluding position relative to the aperture;

an actuator mounted on the frame and disposed in force transmitting relation relative to the gate plate to move the gate plate between the first and second positions; and

first and second chutes, moveably borne by the frame and further moving in unison with the gate plate as it moves between the first and second positions, the respective first and second chutes operable to transport articles away from the vibratory conveyor and which pass through the aperture.

11. A gate assembly as claimed in claim 10, wherein the gate assembly is modular, and can be readily removed from the vibratory conveyor.

12. A gate assembly as claimed in claim 10, and further comprising:
a first mounting fixture mounted on the vibratory conveyor and which is operable to matingly receive the first end of the frame;
a second mounting fixture mounted on the vibratory conveyor; and
a latch assembly borne by the second end of the frame, and which mechanically cooperates with the second mounting fixture, and wherein the latch assembly permits the gate assembly to be releasably mounted on the vibratory conveyor.

13. A gate assembly as claimed in claim 12, and wherein the first mounting fixture defines a channel which is dimensioned to slideably receive the first end of the frame; and wherein the forceable cooperation of the latch with the second mounting fixture causes the frame to slideably move along the channel which is defined by the first mounting fixture so as to locate the gate plate in an operable orientation relative to the aperture.

14. A mounting fixture as claimed in claim 13, and wherein the conveying surface has upwardly and downwardly facing surfaces, and wherein the mounting fixtures are mounted on the downwardly facing surface, and wherein the forceable cooperation of the second mounting fixture with the latch causes the frame to slideably move along the channel and generally in the direction of the downwardly facing surface.

15. A gate assembly as claimed in claim 10, and wherein the second chute is operable to be located in receiving relation relative to the aperture when the gate plate is located in substantially occluding relation relative to the aperture, and wherein the first chute is operable to be located in receiving relation relative to the aperture when the gate plate is oriented in substantially non-occluding relation relative to the aperture.

16. A gate assembly as claimed in claim 15, and wherein the first and second chutes are mounted on the moveable gate plate.

17. A gate assembly for use with a vibratory conveyor, comprising:
a conveying surface borne by the vibratory conveyor, and which transports articles resting on the conveying surface along a path of travel, and wherein the conveying surface has an upwardly facing surface which supports the articles as they move along the path of travel, and which further defines an aperture through which the articles being transported may pass through under the influence of gravity, and which further has a downwardly facing surface;

first and second mounting fixtures mounted on the downwardly facing surface;

a frame having a first end which slideably and matingly engages the first mounting fixture, and an opposite second end;

a selectively actuatable actuator borne by the frame;

a gate plate slideably mounted on the frame, and wherein the actuator is operable to move the gate plate along a reciprocal path of travel between first and second positions;

a latch mounted on the second mounting fixture and which is operable to engage the second end of the frame to releasably affix the frame in an operable orientation relative to the downwardly facing surface;

a first chute borne by the gate assembly and moveable in unison with the gate plate and wherein the first chute is disposed in receiving relation relative to the aperture when the gate plate is in the second position; and

a second chute borne by the gate assembly and which moves in unison with the first chute, and wherein the second chute is located in receiving relation relative to the aperture when the gate plate is located in the first position.

18. A gate assembly as claimed in claim 17, and wherein the first and second chutes are made integral with each other.

19. A gate assembly as claimed in claim 17, wherein the first and second chutes are mounted on the gate plate.

20. A gate assembly as claimed in claim 17, wherein the gate plate in the first position substantially occludes the aperture, and wherein the gate plate in the second position is oriented in a substantially non-occluding position relative to the aperture.

21. A gate assembly for use with a conveyor having a conveying surface and which defines an aperture, the gate assembly comprising:

a modular frame which is releasably mounted on the conveyor and disposed in an operable orientation relative to the aperture;

a moveable gate plate borne by the frame and operable to move along a path of travel between a first position, wherein the gate plate is disposed in substantially occluding relation relative to the aperture, and a second position, wherein the moveable gate plate is oriented in a substantially non-occluding position relative to the aperture;

an actuator borne by the frame, and mounted in force transmitting relation relative to the gate plate to move the gate plate between the first and second positions; and

a first chute mounted on the gate plate and moving in unison therewith, the chute operable to be selectively located in receiving relation relative to the aperture as the gate plate moves between the first and second positions.

22. A gate assembly as claimed in claim 21, and further comprising:

a mounting fixture which is mounted on the conveyor, and which is releasably engageable by the modular frame to facilitate the orientation of the frame in an operable position relative to the aperture.

23. A mounting fixture as claimed in claim 21, and further comprising:

a second chute moveably mounted on the frame and which moves in unison with the first chute, and wherein the second chute is disposed in receiving relation relative to the aperture when the gate plate is located in the first position, and wherein the first chute is located in receiving relation relative to the aperture when the gate plate is located in the second position.

24. A gate assembly as claimed in claim 21, and further comprising:
a latch mounted on the modular frame, and which releasably affixes the modular frame on the conveyor.